



## 1.6. Configure and Verifying IPv4 Addressing and Subnetting (Troubleshooting)

### Objective:

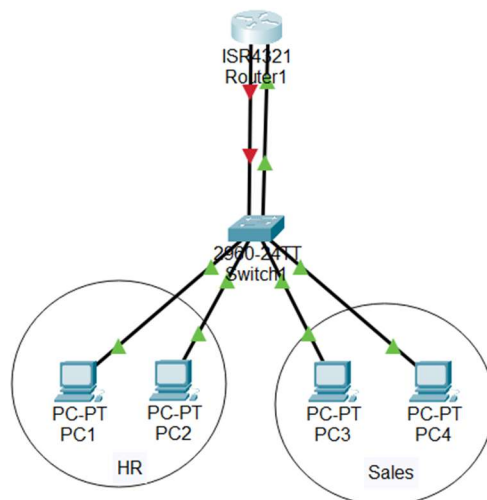
Identify and resolve common IPv4 addressing and interface configuration issues that prevent end-to-end connectivity between devices.

This troubleshooting exercise is based on **CCNA 200-301 Objective 1.6: Configure and verify IPv4 addressing and subnetting**.

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### Topology

- **Router1** connected to **Switch1**
- **Switch1** connected to **PC1, PC2, PC3, and PC4**



Given network: 192.168.10.0/24

Subnet 1 - HR

Mask: 255.255.255.240

Network ID: 192.168.10.0

Useable Host: 14

Ranges: 192.168.10.1 - 192.168.10.14

Default Gateway: 192.168.10.1

Subnet 2 - Sales

Mask: 255.255.255.240

Network ID: 192.168.10.16

Useable Host: 14

Ranges: 192.168.10.17 - 192.168.10.30

Default Gateway: 192.168.10.17

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## Lab Tasks

### Identify network problems and apply fixes.

- **Test Connectivity:** Attempt to ping between PCs across subnets. Document where connectivity fails.
- **Identify Problems:** Use commands on PC's and Router1 to identify misconfigurations.
- **Apply Fixes:** Correct all issues preventing end-to-end connectivity.
- **Verify Connectivity:** Confirm that all PCs can reach their default gateway. Also confirm that PC1, PC2, PC3 and PC4 can successfully ping each other.

The lab is considered “fixed”, when all PC's can ping their default gateway AND each PC.

Ensure you use the IPv4 subnet allocations provided in the lab.

**ANSWERS BEYOND THIS POINT.**  
**LET'S SEE HOW YOU DID!.....**

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## Solution Key

1. On PC2, change the default gateway to 192.168.10.1.
  - Desktop → IP Configuration → Default Gateway.
2. On PC3 and PC4, assign the default gateway as 192.168.10.17.
3. On Router1, enable the Gig0/0/0 interface:
  - Router1> enable
  - Router1# configure terminal
  - Router1(config)# interface gig0/0/0
  - Router1(config-if)# no shutdown
  - Router1(config-if)# exit
4. On Router1, configure the missing IP address on Gig0/0/1:
  - Router1(config)# interface gig0/0/1
  - Router1(config-if)# ip address 192.168.10.17 255.255.255.240
  - Router1(config-if)# no shutdown

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## Verification

- From PC1, ping 192.168.10.18 (PC3).
- From PC2, ping 192.168.10.19 (PC4).
- From the router:
  - Router1# ping 192.168.10.2 # PC2
  - Router1# ping 192.168.10.19 # PC4
- Confirm all PCs can ping their default gateway.
- Confirm cross-subnet pings are successful (PC1 ↔ PC4, PC2 ↔ PC3).